Asset Tangibility, Efficiency And Firm Value: Evidence From Nigeria

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ABSTRACT

The study examined the relationship between Asset tangibility, efficiency and firm value of manufacturing firms listed on Nigeria Stock Exchange between 2018 and 2023. Census sampling technique covering food and beverages, cement and pharmaceutical subsector was used to determine sample size of 22 firms from a population of Sixty-five manufacturing firms with complete data listed on the Exchange. Descriptive statistics and Multiple Regression technique was used for analysis of data while Hausamann test for selection of model was adopted. Various Classic assumption and diagnostic tests were carried out on data set reliability of result. The study found positive significant relationship of firm efficiency with Tobin q with a positive co-efficient 80986.87 and statistically significant p=0.000<0.05. Asset tangibility has negative co-efficient of --68812.96 and P-value of 0.0000<0.05 Indicating a negative significant relationship of asset tangibility with Tobin q. The study found negative co-efficient -14.46009 and P-value of 0.0009<0.05 Indicating a negative significant relationship of firm efficiency with price earnings ratio while Asset tangibility has positive co-efficient of 2.7148 and P-value of 0.0521> 0.05 indicating a positive insignificant relationship of asset tangibility with price earnings ratio. Result also showed efficiency has positive co-efficient 1.20851 and p-value of 0.0009<0.05 Indicating a positive significant relationship of firm efficiency with Enterprise Value while Asset tangibility indicates negative co-efficient of -0.9916 with P-value of 0.0000< 0.05 indicating a negative significant relationship of asset tangibility with Enterprise Value. From the result, we found reverse directional relationship between Efficiency and Asset tangibility on firm value measured by Enterprise value and Tobin Q. We conclude increased Asset tangibility dampens efficiency and vice versa thereby indicating a trade-off of the two firm characteristics. Inflation positively and significantly relates with TOBIN Q and Price earning ration implying increase in inflation increase market value and the ability of firm to convert earnings to market price. Inflation negatively affects Enterprise value. We conclude that Inflation as a Macroeconomic factor affects firm value. We recommend managers should improve efficiency and manage trade-off between asset tangibility and efficiency to maximise shareholders wealth

Keywords: Asset Tangibility, Efficiency, Inflation. Enterprise Value, Price Earnings Ratio, Tobinq, Firm Value

Introduction

A controversial question in the literature of the firm is how value is created and no agreement has been reached by researches as studies provide mixed results. The problem is further compounded by lack of theoretical consensus. Existing theories have different assumptions from which sources value is created and even firms themselves differ in the way they create value. Proponents have put forward economic and organizational strategy as the bedrock of value creation. While some theoretical perspectives x-ray the firm as a bundle of assets focusing on means firms use as a competitive advantage which include tangibles (Plant, machinery and equipment), intangibles, capital, capabilities (talents and human resources). Other theories focus on things and consider the firm as a production system emphasizing that firm assets are not sufficient and should be integrated with other elements to create value. Another theoretical perspective is that firms are a nexus of contract and moves the focal point of analysis away from a firm's assets toward the different human interests and intentions present in the firm and the conflict of interest arising from agent principal relationships. These theoretical disagreements affect valuation of the firm.

The extant literature and empirical investigation fail to provide conceptual clarification of how firm value is created and findings from prior studies are mixed. Apart from the above scenario, maximizing corporate value is cumbersome to managers as they cannot succinctly identify contributory factors enhancing firm value including the direction and size of the contribution of inter play of forces. This, therefore create gap for further studies. Furthermore, studies in Nigeria on what determines value of firm is scanty and produces mixed result. Also, In Nigeria, the value of the firm is embroiled in a hot debate because the valuation of firms has suffered major setback. There is lethargy in prices as most share prices are declining. What then are the true value of the shares quoted in the Nigeria Stock Exchange and what are the determinants of its prices? These are the questions agitating the mind of investors, Managers, Corporate Executives and academics. This study therefore investigates asset tangibility and efficiency with the objective of determining the nature of relationship amongst the variable with firm value.

The contribution which combination of assets make to the success of an entity has been a subject of debate over the decades. Modigliani and Miller (1958) in their proposition of irrelevance of capital structure recognized asset as important for firm value. Asset of a firm consist of fixed assets, current assets, intangibles and long-term investments. Firms use non-current assets to transform raw materials into finished goods. Although fixed asset continues to gain prominence in firms, there is also the need to maintain sufficient current assets to enhance liquidity and satisfaction of short term obligations. This mix require a trade-off which probably impact profitability and investment. The role of asset to the firm is significant. Firstly, asset is utilized for production of goods and services. Assets measure the ability of the firms to survive and compete with other firms (Reyhani, 2012). Assets are held for transaction purposes and some other firms hold it for tax advantage derived during borrowing as interest is tax deductible. Asset forms a basis of valuation of firms. Traditionally, the view is held that a positive relation subsists between firms engaging in production and non-current assets because producing firms required a high percentage of non-current assets to process raw materials into end-products. Growth in non-current assets are expected to raise future earnings because capacity utilization of these non-current assets is expected to increase production. There is also the issue of firms timing asset sales as a strategy to manipulate earnings. Firms can hold asset as security for loans. In theory, it can reasonably be expected that a firm with high level of highly liquid assets and tangible assets with high-collateral value is likely to use trade credit (Lu-Andrews & Yu-Thompson, 2015). The liquidation advantage of these assets enables the firm to use trade credit less costly than bank loans. Thus, such a firm is likely to suffer less financial distress, compared

to a firm with relatively high level of intangible assets. Tangibility, here, serves as the catalyst leading to reduction in financial distress and improving financial performance. Firms can also hold assets for production, for transaction purposes in which case they are targeting future sales for profit. There is also the argument that asset volatility increases firm value. Lewellen (1971) argued that for multi asset firms, the volatility level of assets affect valuation and concluded that decrease in asset correlation increases coinsurance effect and increase firm value. Greenbaum and Thakor (1987) disclosure of unknown private information about firm assets to investors makes the firm better off when it disposes them and uses as collateral good quality assets while maintaining poor quality assets in its books and fund it with deposits. It is also argued that high asset tangibility does not necessarily translate to high performance. The argument is enthused that the efficiency in the utilization of resources determines its success. There is also the ongoing debate that intangible assets such as intellectual capital and the way a firm resource is deployed determines its value. These arguments are anchored on the value chain theory and the resource-based theory. The raging controversy ignites the researchers' interest for further studies on the subject

In Nigeria, the valuation of firms quoted in the Nigeria stock Exchange has been controversial largely due to the constant fluctuation in market prices of shares leading to general apathy in transactions in the market. Existing shareholders have lost value of investment and new Investors interest in the market is weaning. The market is bearish leading to loss of value and declining capitalization. The poor economic condition is not favorable to firms as many firms witness declining profits due to hard economic conditions. More challenging is the galloping inflation which erodes disposable income and reduce demand, and lead to building up of inventory, loss of job and this in turn stifle production and value creation

Another perspective is the role political event play in firm value. Quite recently during electioneering and announcement of election result in Nigeria the stock market witnessed loss of value and shed more than 60% prices. Many firms with high market valuation are known to have collapsed months after announcement of superlative results (Oceanic bank, African Expess Bank, Intercontinental bank, Enron, Tyco). This draws another question about the role earnings announcement play in firm valuation, quality of accounting reports and firm value. It is generally believed that both internal and external factors impact on firm value. The objective of the study is to ascertain the role played by assets and efficiency in determining firm value.

LITERATURE

Theoretical Underpinning

The theories surrounding the subject of firm value is varied and conflicting as much as prior research on the subject. This section tries to x-ray the theories in the context of our study**.** Theoretically, the proposition by Miller and Modigliani (1958) of the irrelevance of capital structure as a determinant of firm value but in place opined that firm value is determined by assets owned by the firm forms the springboard for discussion on asset tangibility and efficiency.

The pecking order theory in contrast suggested that funding plays a role in the determination of firm value and suggested that the funding arrangement rather that assets of the firm determine its value. This suggestion that the way a firm operation is funded determines its value. The pecking order theory by Myers (1984) contrasts with Miller and Modigliani (1958) proposed that when funding is required by a firm, the firm will prefer internal financing because no cost is attached and when available internal financing opportunities are exhausted the firm will utilize debt because of its tax advantage before consideration is given to equity financing as the last resort and by implication funding arrangement determines firm value. The argument is premised on the believe that managers know the current earnings of the firm and future growth opportunities more than outsiders and are

willing to reduce cost and take advantage of tax benefits from interest on loans to lower cost and avoid equity issuing costs. Borrowing however require securitization The theory further espoused that tangible assets impact the ability of the firm to securitize borrowed funds since firms with higher fixed assets value easily access funds when compared to firms with higher non-tangible assets. The argument is anchored on the ability of the firm to mitigate investment risks by easily disposing the tangible assets which may impact on performance. Studies also confirm higher borrowing increases firm performance and assets facilitating borrowing is perceived to correlate with firm performance. The relevance of asset is further espoused by Campello & Giambona (2010) when they averred that firms cannot borrow money without a strong assets structure and creditors prefer the tangible assets when they decide to lend money to others.

Psillaki and Daskalakis (2008) investigated the capital structure of Greek, French, Italian and Portuguese small and medium-sized enterprises. They argue that the costs of financial distress depend on the types of assets that a firm employs. If a firm retains large investments in land, equipment and other tangible assets, it will have smaller costs of financial distress than a firm that relies on intangible assets. Thus, firms with more tangible assets should issue more debt.

Trade off theory postulated by Myers (1984) posit the tax advantage enjoyed by leverage firm and that this enhances performance. It follows from this line of argument that since assets facilitate borrowing by providing the needed collateral, tangible assets correlate with performance mainly because higher assets support higher borrowing with the attendant tax advantage which impacts positively on performance. Koralun-Bereźnicka (2013) suggested that high current assets lower short-term debts while high tangible assets support higher debts and this by extension imply reduced risk of bankruptcy cost and improved performance. The trade-off theory predicts the existence of an optimal capital structure of debt and equity (a target debt ratio), where debt tax shields are maximized and bankruptcy costs associated with the debt are minimized. Firms increase the level of debt financing to gain maximum advantage of tax shield considering increasing riskiness of a possible bankruptcy.

Porter's (1985) value chain model assumes that firm value derives from the improvement and alignment of a firm's activities. The idea of the value chain is based on the process view of organizations, the idea of seeing a manufacturing (or service) organization as a system, made up of subsystems each with inputs, transformation processes and outputs. Inputs, transformation processes, and outputs involve the acquisition and consumption of resources - money, labor, materials, equipment, buildings, land, administration and management. How value chain activities are carried out determines costs and affects profits. Most organizations engage in hundreds, even thousands, of activities in the process of converting inputs to outputs. These activities can be classified generally as either primary or support activities that all businesses must undertake in some form.

Transaction Cost Theory (Williamson 1979, 1986) states that the optimum organizational structure ensures achievement of economic efficiency through maximization of the exchange costs. The theory suggests that different transactions transaction produces coordination costs of monitoring, controlling, and managing transactions. Firm value could be enhanced through efficiency in cost minimization. The theory emphasizes accounting for the actual cost of outsourcing production of products or services including transaction costs, contracting costs, coordination costs, and search costs. The inclusion of all costs is considered when making a decision and not just the market price. This enhances firm value.

Conceptual Framework

According to Creswell (2003) categorization, mapping and description of concepts and inter relationships amongst variable of study can be

achieved through conceptual framework. The framework assists the researcher to establish the research, scope, identify gaps in literature and establish relationships among the concepts of study

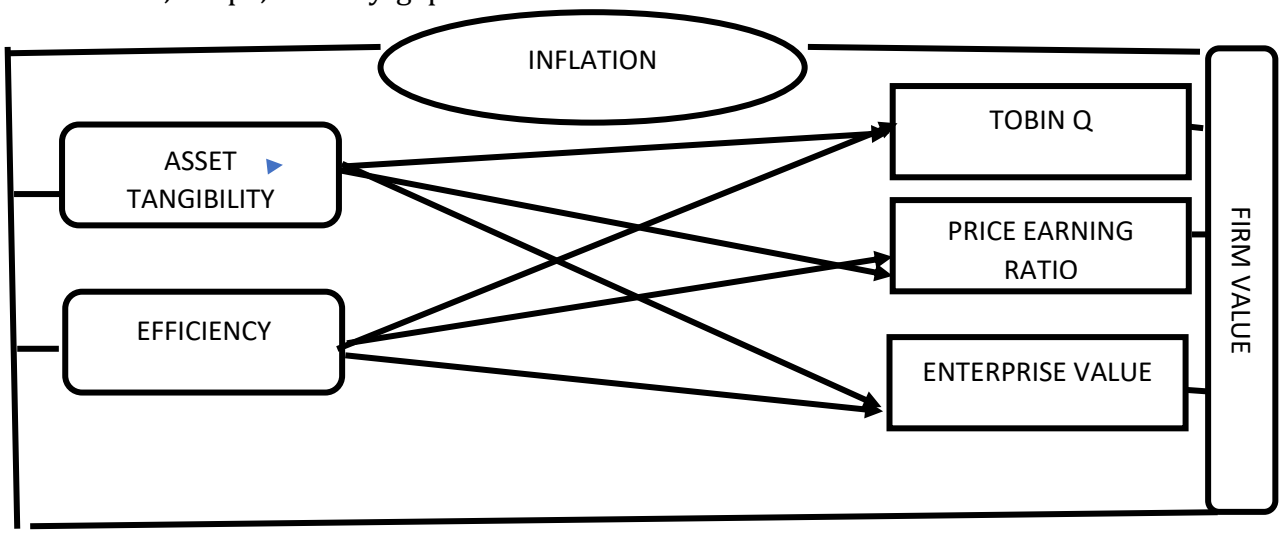

Figure 1: Conceptualized Framework of Asset Tangibility, Efficiency and Firm Value

Asset Tangibility

The tangibility of assets represents the effect of the collateral value of assets of the firm's gearing level. There are various conceptions for the effect of tangibility. If debt can be secured against assets, the borrower is restricted to using debt funds for specific projects. Creditors have an improved guarantee of repayment, but without collateralized assets, such a guarantee does not exist. Hence, the tradeoff theory predicts a positive relationship between measures of leverage and the proportion of tangible assets. On the other hand, managers of highly levered firms will be less able to consume excessive perquisites, since bondholders more closely monitor such firms. The monitoring costs of this agency relationship are higher for firms with less collateralized assets. Therefore, firms with less collateralized assets might voluntarily choose higher debt levels to limit consumption of perquisites. The tangibility is the ratio of fixed assets to total assets.

Efficiency

Firm efficiency refers to a firm's ability to maximize output with given inputs, meaning it produces goods and services effectively and without waste. This can be broken down into allocative, productive, and dynamic efficiency. The efficiency of a firm ensures profitability as the opposite causes waste of resources and led to poor quality of output and quantity and have negative effect on profitability. Management inefficiency in making timely decisions impact negatively on the overall performance of a business entity. Allocative efficiency, in the context of a firm, refers to the optimal allocation of resources to produce the goods and services that society values most, given the available resources and technology. his occurs when a firm produces goods and services at the lowest possible cost, given the current technology and resources. Dynamic efficiency refers to the ability of an economy or a firm to innovate and grow over time, involving the development and adoption of new technologies and production method while operational efficiency focuses optimizing day-to-day processes and resource utilization to reduce costs and improve productivity

EMPIRICAL REVIEW

Alathamneh et.al (2025) examined effect of asset tangibility on market value and of mining and extraction firms listed on Amman Stock Exchange for the period 2013 to 2022 using secondary data. To establish the relationship, multiple regression was used to regress asset tangibility on Tobin's Q as an indicator of market value, while return on assets as measure of profitability. The outcome indicated significant impact of asset tangibility on profitability and firm market value. The results

further confirm profitability has a significant impact on firm market value

Nangih and Turakpe (2023) examined the effect of asset tangibility on market performance of consumer and industrial firms listed on Nigeria stock exchange using secondary data for the period 2013–2022. Findings confirmed asset tangibility insignificantly and negatively relate to market performance of firms while intangible noncurrent assets positively and significantly relate to market performance. Oganda, Mogwambo and Museve (2023) examined asset tangibility and financial performance of manufacturing firms in Kenya for the period 2010-2019. Asset tangibility was found to positively correlated with Tobin Q and enterprise value.

Olatunde, O. et.al. (2017) examined assets tangibility and stock returns in Nigeria in a sample of forty-three firms for the period 2008-2015. The study employed ex-post facto design and analyzed data using panel Estimated Generalized Least Squares (EGLS) regression with fixed effect after the regression assumption test as well as preliminary analyses. The study found a positive relation between asset tangibility and firm value Birhan (2017) found positive significance of asset tangibility on performance in a study of Ethiopian firms. The study found that asset tangibility is significant and positive on the firms' financial performance. Olatunji and Tajudeen (2014) found a positive relationship exist between asset tangibility and firm performance. Barus, Muturi, Kibati, and Koima (2017) in a study of 83 lease companies listed on Nairobi Stock exchange examined how asset quality of selected public limited companies in Kenya affects financial performance during the period 2011–2015 using exploratory research design and found asset tangibility impact firm performance. Lima (2009) found tangibility was positively related to the capital structure. Mohammad et.al (2017) in their study of firm value using net fixed asset turnover as a proxy for efficiency found insignificant relationship between firm value measured by tobin q. Chowdhury and Chowdhury (2010) studied firm efficiency using fixed asset turnover as a proxy and found a significant negative impact, though on firm value. Kocaman, Altemur, Aldemir and Karaca's (2016) works on manufacturing firms in Turkey a confirmed a positive significant relationship of tangible assets and financial performance. Harris & Raviv (1990) and Williamson (1988) confirmed asset tangibility is positively correlated with capital structure. Mohammad et.al (2017 also found a positive insignificant relationship exists between asset tangibility proxied by fixed assets to total assets ratio and firm value represented by Tobin Q. Mehari and Aemiro (2013) studied insurance firms in Ethiopia and confirmed positive significant relationship of asset tangibility with financial performance.

Contrastingly other studies (Okwo, Okelue & Nweze ,2012 ; Kotsina & Hazak ,2012; Derbali ,2014) found no relation between asset tangibility and firm value. Some other studies however found negative relationships of asset tangibility with firm value and performance. Arilyn (2019) in the studies showed that asset tangibility impacts the firm negatively. Also, Vintila and Nenu (2015) studied firms listed on Romania Stock Exchange and found a significant negative relationship of asset tangibility with performance.

In terms of efficiency Mba and Agwu (2024) examined efficiency and firm performance of manufacturing firms in Nigeria using Frontier analysis. Result showed inputs of capital, labour, raw materials, cost of energy and other expenses affect firms' profitability positively. The result also revealed that firm age, total assets and management efficiency are the technical inefficiency in Nigeria Manufacturing firms

Tarkom and Ujah (2023) investigated effect of inflation and interest rate on firm efficiency while exploring the role of policy uncertainty. The study found inflation positively affects firm efficiency, while interest rate negatively affects firms' efficiency. Ngagi et.al (2017) T examined the influence of a firm's efficiency on the relationship between capital structure and firm value. The study analyzed thirty non – financial firms listed at the Nairobi Securities Exchange for a period of six years from 2008 to 2013. The results showed that cost efficiency negatively influences the relationship between capital

structure and firm value. Further Operating efficiency negatively and statistically significantly affects the relationship between firm value and capital structure while profit efficiency negatively and insignificantly influences the relationship between capital structure and firm value firm efficiency insignificantly influences the relationship between capital structure and firm value.

Ngugen et.al (2024) examined effects of firm efficiency on firm performance and how controlling shareholders moderate the link between the two variables for the period 2015 to 2019 in Malaysia results confirmed firm efficiency parameters (technical efficiency, pure technical efficiency and scale efficienc) have mixed results with performance (return on assets, market-to-book ratio and operating cash flows), all of which are being moderated by controlling shareholdings

Methodology

Data

This study adopted ex-post facto design based on secondary data obtained from the Nigeria stock exchange for the period 2018-2023 from manufacturing firms listed on the exchange at the time of the study. The population consist of all the eighty Sixty-five manufacturing firms listed on the Nigeria Stock Exchange but sample size based on census sampling technique consist of twenty-two manufacturing firms. Census sampling method does not require sample size determination hence we studied the subsector of food beverages, pharmaceuticals and Cement. Information is collected from annul reports of the concerned listed companies from NSE library and from the website of individual companies. Firms listed under this industry were selected based on their consistency of performance, data availability and favorable (positive) figures. Firms showing inconsistent observations on the statement of financial position are excluded to avoid pollution of data that may lead to misleading results. Descriptive statistics, Multiple Regression analysis, classic assumption tests and Hausman test for selection of model was applied on data set.

Variables

Independent variables

TAN *i*, *t* = Net fixed assets to total assets ratio of firm *i* in year *t* as a proxy of assets tangibility

EFC *i*, *t* = Net fixed asset turnover ratio of firm *i* in year *t* as a proxy of efficiency of the firm

Dependent variable

In the corporate governance literature, there is debate over whether firm performance should be measured by use of profit ratios–Tobin ‘s Q or ROA. Demsetz and Villalonga (2001) suggest that these measures differ in two ways. The first relates to the time horizon. Accounting profit ratios are backwards-looking measures of corporate performance, while Tobin ‘s Q is a forward-looking measure. Accounting profit ratios are affected by accounting practices and emphasize management accomplishments, while Tobin ‘s Q reveals the value investors assign to a firm ‘s tangible and intangible assets based on predicted future revenue and cost streams. The second difference relates to who calculates the measure of firm performance. Accounting profit measures are commonly adopted by accountants constrained by accounting standards and accountability. The Tobin ‘s Q measure is widely used by a community of investors constrained by their perceptions, including their acumen, optimism or pessimism. Demsetz and Villalonga (2001) believe that the later method is favored by most economists.

The dependent variable for this study are:

Tobin Q

Tobin Q (TOBQ) = ratio expresses the relationship between market value of a firm and the cost of replacing the asset.

We adopt Chung and Pruitt’s approximating formulation of Tobin’s Q = MVE + PS +DEBT/TA

Price earnings ratio

Price to Earnings Ratios (PERR)

This ratio is a yardstick for measuring times share price cover earnings per share in a particular period thus providing an indication for payment by investors for each financial unit of measurement. The method is popular in judging or evaluating financial results. The ratio gives an indication of market perception of a firm’s share and is calculated using current price and earnings.

PE ratio = Market price per share
Earnings per s
ENVA Enterprise value
Sales

Moderating variable

Inflation: High inflation tends to make firms borrow instead of raising equity. We expect inflation and firm value are positively related. This is a macroeconomic index as published by Federal Office of statistics

Model Specification

$$TOBQ = \alpha_0 + \alpha_1 EFC + \alpha_2 TAN + \alpha_3 INF + U_{1,t} \quad (i)$$

$$PERR = \beta_0 + \beta_1 EFC + \beta_2 TAN + \beta_3 INF + U_{2,t} \quad (ii)$$

$$ENVA = w_0 + w_1 EFC + w_3 TAN + w_3 INF + U_{3,t} \quad (iii)$$

Result

Descriptive Statistics

The result obtained from data analysed on descriptive statistics is presented on Table 1 below:

Table 1. Descriptive Analysis

	Mean	Median	Max	Min	Std. Dev.	Jarque-Bera	Prob	Obs
ENVA	1.327519	1.033682	6.077683	-0.37589	0.908881	277.9778	0	103
TOBIN	66564.33	680.3367	2576213	0.624091	379552.2	4718.986	0	103
PERATIO	89.6115	7.733333	8100	-64.3125	797.2917	42825.27	0	103
EFFI	0.965116	0.654597	5.168956	0.115039	0.961992	209.0404	0	103
ATANG	0.621243	0.591371	6.141181	0.070888	0.599394	21007.95	0	103
INFL	11.54359	9.01	16.5	8.06	3.752132	16.58693	0.0003	103

Table 1 shows the descriptive statistics for the variables and as observed, the mean for ENVA is 1.3275 with maximum and minimum values of 6.0776 and -0.375. The mean value for TOBIN is 66564.33 which is high and indicates that the firms tend to have high market valuation with maximum and minimum values of 2576213 and 0.624091 respectively. PE-RATIO has mean value of 89.6115 which is quite high with maximum and minimum values of 8100 and -64.3125 respectively.. EFFI has a mean value of 0.9652 with maximum and minimum values of 5.168956 and 0.115039 respectively. The mean for ATANG stood at 0.6212 with maximum and minimum values of 6.141181 and 0.070888 respectively. The mean for INFL stood at 11.5436 with maximum and minimum values of 16.5 and 8.06 respectively.

Stacked Cross-section Trend of Variables

The stacked cross section average movements in the variables reveals the presence of year on year fluctuations across the cross-sections for a number of the variables. ENVA shows significant heterogeneity in its behaviour across all firms but in the case of TOBIN Q, there is evidence of concentration of high values at a period for most of the firms as shown in the peaked nature of the graph. The same behaviour is also observed for PERATIO as considerable concentration is observed to be peaked at a year indicating less firm to firm and year on year heterogeneity. EFFI is characterized by very strong drifts across the stack cross-sections indicating the presence of significant volatility in EFFI values for the firms across time. The behaviour of ATANG depicts considerable clustering and less volatility indicating some sort of similarity in its movement for the stacked cross-sections.. INFL show less variability year on-year as the rate as appeared stable at double digit and finally firm size as expected depicts significant firm heterogeneity

Pearson Correlation Result

The result showing correlation amongst the variables are presented on Table 2 below

Table 2: Pearson Correlation table

	ENVA	TOBIN	PERATIO	EFFI	ATANG	INFL
ENVA	1					

TOBIN	0.3242	1				
Prob	0.0008					
PERATIO	-0.080	-0.017	1			
Prob	0.4211	0.8644				
EFFI	0.8108	0.2918	-0.0609	1		
Prob	0.000	0.0028	0.541			
ATANG	0.1086	0.0652	-0.0286	0.63	1	
Prob	0.2748	0.5128	0.7743	0.000		
INFL	0.0094	0.0838	0.10817	-0.04	-0.117	1
Prob	0.9251	0.4001	0.2768	0.728	0.2413	

Table 2 shows the Pearson product moment correlation and the significant p-values for the variables. The result as presented in Table 2 and it shows that ENVA is positively related with EFFI (r=0.8108, p= 0.000), ATANG (r=0.1086, p= 0.2748 INFL (r=0.0094, p= 0.9251) In addition, the table shows the correlations between TOBIN Q and the other independent variables and as observed TOBINQ is positively correlated with EFFI (r=0.2918, p= 0.0028), ATANG (r=0.0652, p= 0.5128), INFL (r=0.0838, p= 0.4001) In addition, the table shows the correlations between PERATIO and the other independent variables and as observed PERATIO is positively correlated with INFL but negatively correlated with EFFI (r=-0.0609, p= 0.541). The positive correlations indicate that a rise in one variable will result in a rise in the other and vice versa. However, corrections are not best suited for functional dependence causality and hence the study proceeds to perform the panel regression analysis.

Multicolinearity Test

The test is carried out for multicollinearity amongst the variable of study Variance inflation test is conducted for this purpose and result is presented on Table 3 below:

Table 3. Variance Inflation Factors

Variable	Variance	VIF
LEV	0.030525	1.508618
EFFI	0.001304	1.914975
ATANG	0.00302	1.719052
INFL	4.63E-05	1.043943

Multicollinearity among the independent variables implies that they are perfectly correlated. If there exists perfect correlation between the independent variables, the parameter coefficients will be indeterminate. In the presence of multicollinearity, there will be large standard errors of the estimated coefficients. In this study, the variance inflation factor test is constructed to test for multicollinearity. The rule for the VIF is that the values less than 10 indicates the absence of serious collinearity. As shown, the VIF values of all the variables are all less than 10 and hence there is no threat of multicollinearity amongst the variables.

Asset Tangibility, Efficiency and Enterprise Value

The econometric relationship for determinants of firm value and Enterprise value is stated as follows:

$$\mathbf{ENVA = w_0 + w_1EFC + w_2TAN + w_{11}INF + U_1,t}$$

The regression result for this model is stated on table 4 below:

Table 4. **Asset Tangibility, Efficiency and ENVA**

Variable	**Aprori Sign**	FE Model	RE Model
C	+	0.9820 (0.4590) [0.0358]	1.2202 (0.2746) {0.000}
EFFI		1.20851 * (0.0448) [0.000]	1.1664 (0.0343) {0.000}
ATANG		-0.9916* (0.0379) {0.000}	-1.01250 (0.0522) {0.0000}
INFL		-0.00209 (0.0012) {0.0972}	-0.00617 (0.0064) {0.3245}
Model Parameters			
R^2		0.9834	0.9290
Adjusted R^2		0.9766	09214
F-statistic		144.582	121.775
Prob(F-stat)		0.000	0.00
Durbin-Watson		1.99	0.9349
Model Diagnostics			
Hausman	0.000		
Ramsey Reset test		0.410	
Period Hetero.Test		0.112	
Cross-section Hetero.Test		0.709	
Pesaran CD for serial correlation		0.483	

Table 4 show the regression results and white adjusted standard errors was employed to control for potential heteroskedasticity in the estimation and hence the estimation results are free from heteroskedasticity while the Cochrane Orcutt autoregressive (AR) procedure was employed to correct for serial correlations where it is detected. The Hausman test statistic with p-value = 0.00, indicates that the FE is the preferred model to the random effects indicating the presence of correlations between the errors and the explanatory variables which is the key assumption of the fixed effects (Hausman, 1998). Both panel period heteroskedasticity and cross-sectional heteroskedasticity test confirm that the estimations were found to be free from such. The Peseran cross-dependence test was employed to confirm the threat of the serial correlation in the errors and the statistic reveals the absence of cross-section dependence in the residuals. The Ramsey reset test confirms that the model is correctly specified. The R^2 is 98.34% with and adjusted value of 97.66%. The F-stat of 144.582 (p-value = 0.00) and significant at 5%. The Durbin Watson value of 1.99 suggest that the presence of serial correlation between the errors is unlikely in the model. The analysis of coefficients reveals that ENVA has a positive effecton EFFI is (1.2085) and statistically significant (p=0.000) at 5%. The effect of ATANG is negative (-0.9916) and statistically significant (p=0.000) at 5%. The effect of INFL is negative (-0.00209) and statistically significant (p=0.0972) at 10%.

Asset Tangibility, Efficiency and TOBINQ

The econometric relationship for tobin q and Asset Tangibilty and efficiency is as stated below:

TOBQ= α_0 + α_1EFC +α_2TAN+ +α_{11}INF+ $U_{1,t}$

The regression result based on the model specified above is stated on table 5:

Table 5. **Asset Tangibility, Efficiency and TOBIN Q**

Variable	**Aprori Sign**	FE Model	RE Model
C	+	3979154. (177449.9) [0.000]	961664.2 (79261.09) {0.000}
EFFI		80986.87* (10149.19) [0.000]	70130.81 (0.9910) {0.000}
ATANG		-68812.96* (7762.689) {0.000}	76145.7 (15083.03) {0.0000}
INFL		6948.854 (1519.7) {0.000}	12250.1 (1866.9) {0.000}
Model Parameters			
R^2		0.9418	0.7785
Adjusted R^2		0.9179	0.753
F-statistic		39.3933	32.695
Prob(F-stat)		0.000	0.000
Durbin-Watson		1.7	0.5529
Model Diagnostics			
Hausman	0.000		
Ramsey Reset test		0.291	
Period Hetero.Test		0.893	
Cross-section Hetero.Test		0.1194	
Pesaran CD for serial correlation		0.110	

Table 5 show the regression results for TOBIN Q and identified corporate determinants. The Hausman test statistic with p-value = 0.038, indicates that the FE is the preferred model to the random effects indicating the presence of correlations between the errors and the explanatory variables which is the key assumption of the fixed effects (Hausman, 1998). The R^2 is 94.18% with and adjusted value of 91.79%. The F-stat of 39.393 (p-value = 0.00) and significant at 5%. The Durbin Watson value of 1.7 suggest that the presence of serial correlation between the errors is unlikely in the model. The analysis of coefficients reveals that EFFI has a positive beta (80986.87) and statistically significant (p=0.000) at 5%. ATANG is a negative beta (-68812.96) and statistically significant (p=0.000) at 5%. INFL has a positive beta (6948.9) and statistically significant (p=0.000) at 5%. Both panel period heteroskedasticity and cross-sectional heteroskedasticity test confirm that the estimations were found to be free from such. The Peseran cross-dependence test was employed to confirm the threat of the serial correlation in the errors and the statistic reveals the absence of cross-section dependence in the residuals. The Ramsey reset test confirms that the model is correctly specified.

Asset Tangibility, Efficiency and Price Earnings Ratio

The econometric model for asset tangibilty and price earnings ratio is stated below:

PERR = β_0 + β_1EFC+β_2 TAN+β_3INF+ $U_{2,t}$

Based on this relation, regression result to ascertain the nature of relationship between the variables of study is presented on table 4.6 below

Table 6. Asset Tangibility, Efficiency and Price Earnings Ration

Variable	**Aprori Sign**	FE Model	RE Model
C	+	-52.2849 (8.5441) [0.000]	74.9118 (45.324) {0.1018}
EFFI		-14.46009* (0.9303) [0.0009]	1.5076 (5.669) {0.7909}
ATANG		2.7148* (1.3746) {0.0521}	1.04889 (8.3937) {0.9008}
INFL		0.7194 (0.2315) {0.0027}	1.8438 (1.01629) {0.0729}
Model Parameters			
R^2		0.999	0.998
Adjusted R^2		0.999	0.997
F-statistic		1005.57	4816.000
Prob(F-stat)		0.000	0.000
Durbin-Watson		2.2	2.5
Model Diagnostics			
Hausman	0.000		
Ramsey Reset test		0.531	
Period Hetero.Test		0.387	
Cross-section Hetero.Test		0.681	
Pesaran CD for serial correlation		0.295	

Table 6 show the regression results for Price earnings ratio and identified value determinants. The Hausman test statistic with p-value = 0.000, indicates that the FE is the preferred model to the random effects indicating the presence of correlations between the errors and the explanatory variables which is the key assumption of the fixed effects (Hausman, 1998). The R^2 is 99% which indicates a very good fit validating the choice of variables selected as determinants of PERATIO. The F-stat of 1005.57 (p-value = 0.00) and significant at 5%. The Durbin Watson value of 2.2 suggest that the presence of serial correlation between the errors is unlikely in the model. The analysis of coefficients reveals that EFFI has a negative beta (-14.460) and statistically significant (p=0.00) at 5%. ATANG is a positive beta (2.7148) and statistically significant (p=0.052) at 10%. INFL has a positive beta (0.7194) and statistically significant (p=0.00) at 5 %. Both panel period heteroskedasticity and cross-sectional heteroskedasticity test confirm that the estimations were found to be free from such. The Peseran cross-dependence test was employed to confirm the threat of the serial correlation in the errors and the statistic reveals the absence of cross-section dependence in the residuals. The Ramsey reset test confirms that the model is correctly specified.

Summary of Regression Result

The summary or regression results from table .4, 5 and 6 is presented on .7 for ease of comprehension and application.

Table 7: Result Summary

Variable	**ENVR MODEL**	TOBIN Q Model	PERATIO Model
C	0.9820* (0.4590) [0.0358]	3979154* (177449.9) [0.000]	-52.2849* (8.5441) [0.000]
EFFI	1.20851 * (0.0448) [0.000]	80986.87* (10149.19) [0.000]	-14.46009* (0.9303) [0.0009]
ATANG	-0.9916* (0.0379) {0.000}	-68812.96* (7762.689) {0.000}	2.7148** (1.3746) {0.0521}
INFL	-0.00209** (0.0012) {0.0972}	6948.854* (1519.7) {0.000}	0.7194* (0.2315) {0.0027}

The summary of the results reveals that looking at the proxies for market value; ENVR, TOBIN Q and PERATIO, the estimation shows that EFFI is observed to be a significant determinant of ENVR, TOBIN Q and PERATIO all at 5% significant level. ATANG also maintains statistical significance as a predictor of ENVR and TOBIN Q at 5% and PERATIO at 10. INFL is observed to be a significant determinant of TOBIN Q and PERATIO all at 5% significant level and PERATIO at 10% level l.

Test of Hypotheses

HO1: **There is no significant relationship between efficiency, asset tangibility and Tobin Q.**

This hypothesis can further be broken into eight sub-hypotheses for proper evaluation of the relationship between determinants and firm value

H01a: There is no significant relationship between efficiency and Tobin Q.

Based on Table 5 with positive co-efficient of 80986.87 and P-value of 0.0000< 0.05

Indicating a positive significant relationship of firm efficiency with Tobin q. Based on result we reject the hypothesis that there is no significant relationship between firm efficiency and Tobin q

Ho1b: There is no significant relationship between asset tangibility and TobinQ.

Based on Table 5 with negative co-efficient of --68812.96 and P-value of 0.0000<0.05 indicating a negative significant relationship of asset tangibility with tobin q. Based on result we reject the hypothesis that there is no significant relationship between Asset tangibility and Tobin Q

HO2: There is no significant relationship efficiency, asset tangibility, and Price earnings ratio.

H02a: There is no significant relationship efficiency and Price Earnings ratio.

Based on Table 6 with negative co-efficient -14.46009 and P-value of 0.0009<0.05 indicating a negative significant relationship of firm efficiency with price earnings ratio. Based on result we reject the hypothesis that there is no significant relationship between Firm efficiency and price earnings ratio

Ho2b: There is no significant relationship between asset tangibility and Price Earnings ratio.

Based on Table 6 with positive co-efficient of 2.7148 and P-value of 0.0521> 0.05 Indicating a positive insignificant relationship of asset tangibility with price earnings ratio. Based on result we accept the hypothesis that there is no significant relationship between asset tangibility and price earnings ratio

HO3: There is no significant relationship between efficiency, asset tangibility and Enterprise value.

H03a: There is no significant relationship efficiency and Enterprise Value.

Based on Table 4 with positive co-efficient 1.20851 p-value of 0.0009<0.05 indicating a positive significant relationship of firm efficiency with Enterprise Value. Based on result we reject the hypothesis that there is no significant relationship between Firm efficiency and Enterprise value.

Ho3b There is no significant relationship between asset tangibility and Enterprise Value.

Based on Table 4 with negative co-efficient of -0.9916d P-value of 0.0000< 0.05 indicating a negative significant relationship of asset tangibility with Enterprise Value. Based on result we reject the hypothesis that there is no significant relationship between asset tangibility and Enterprise Value

Discussion of Findings

The objective of the study was to ascertain the nature of relationship between efficiency and tangibility and firm value measured by Tobin Q a, price earnings ratio and Enterprise value multiple. The study found a positive significant relationship of firm efficiency with Tobin q and Enterprise value implying that increases in firm efficiency increases Tobin q and Enterprise value. Efficiency has a negative significant relationship with price earnings ratio and Enterprise value.

Gharaibeh A and Qader A. (2017) efficiency have positive, but statistically insignificant relationships with firm value. Our study contrast with this finding and reports a significant positive relationship of firm efficiency with Tobin Q and Enterprise value implying that as firms become more efficient the market value of the firm increases probably due to increase positive outlook of investors on the firm. . Efficiency however has a negative significant relationship with price earnings ratio thus agreeing with Chowdhury and Chowdhury (2010) which found a significant negative impact on firm value. The implication of this finding being that the rate which earnings convert to market price of shares have an inverse relationship with firm efficiency. The higher the efficiency of the firm the lower the price earnings ratio. The implication of this finding is that as firms' increases in efficiency and earnings rises the price of share in the stock exchange does not automatically respond to this efficiency. The reason may be attributed to the issue of dividends pay out which investors prefer to receive during period of increase earnings rather than retention which is likely to increase share prices depending on the tax bracket which investors belong.

This study confirms a negative significant relationship of asset tangibility with tobin q and Enterprise value; and an insignificant positivevalue with price earnings ratio. The findings of our study agrees with the findings of Arilyn (2019; Vintila and Nenu (2015) who also found negative relationship of asset tangibility with firm value in the studies but disagree with Olatunde, O. et.al. (2017) Birhan (2017); Olatunji and Tajudeen's (2014); Barus, Muturi, Kibati, and Koima (2017); Lima (2009) ;Kocaman, Altemur, Aldemir and Karaca's (2016). Harris & Raviv (1990) and Williamson (1988);Mehari and Aemiro (2013) who found positive relationship amongst the variables of study.

From the result, we found reverse directional relationship between Efficiency and Asset tangibility on firm value measured by Enterprise value and Tobin Q. increased Asset tangibility dampens efficiency and vice versa thereby indicating a trade-off of the two firm characteristics

Theoretically, the value of a firm according to Modigliani and Miller (1958) is not determined by its funding arrangement but rather by the value of assets. Our findings of a negative relation of asset tangibility with Tobin Q and Enterprise value negates this theory and aligns with Porter's value chain theory which posits that firm derive value from the improvement and alignment of a firm's activities which include inputs such as transformation processes, and outputs acquisition and consumption of resources - money, labor, materials, equipment, buildings, land, administration and management. Theoretically, the positive significant relationship of efficiency with Tobin Q and Enterprise value supports Porter's value chain which suggests the inputs and consumption of resources enhances firm value. Also, the significant positive relationship of efficiency with TOBIN Q and Enterprise value

supports Transaction cost theory which focuses on efficiency and the reduction of costs by making make-or-buy decisions. It predicts that, if the costs of producing a product are lower than the cost of buying that product, the firm will internalize the production of that product (Williamson, 1981).

Conclusion

The objective of the study was to empirically ascertain the relationship between asset tangibility, efficiency and firm value. Based on findings of the study we conclude that Firm efficiency positively and significantly relates with Tobin Q and Enterprise value while negatively and significantly relating with P/E Ratio. Asset tangibility negatively and significantly relate with Enterprise value and positively insignificantly relate Enterprise value while also positively and insignificantly relating with Price earnings ratio. We also conclude that Inflation as a Macroeconomic factor affects firm value. Inflation as a macroeconomic factor significantly affects market value using Tobin Q and the rate that earnings are converted to market price of shares (Price earnings ratio. We observed a trade-off of asset tangibility and efficiency on impacting performance.

Recommendation

Based on findings of the study we recommend that depending on the corporate goal of the firm Managers should pay special attention to, firm efficiency, asset tangibility with the objective of maximising value to stakeholders. Managers should look for optimal mix for assets as increases in fixed assets impact efficiency negatively.

Implication for Theory and Practise

Theoretically our study supports and is derived from many theoretical underpinnings. Transaction cost theory focuses on efficiency and the reduction of costs by making make-or-buy decisions. It predicts that, if the costs of producing a product are lower than the cost of buying that product, the firm will internalize the production of that product (Williamson, 1981). As such, the firm is assumed to create value by reducing costs in comparison to the market through efficiency. Our study confirmed a positive significant relationship of firm efficiency with Tobin Q and Enterprise value thus aligning with the transaction cost theory and Porter's value chain. A negative significant relationship of asset Tangibility with Enterprise Value suggesting that an increase in asset tangibility reduces firm value further negates the proposition of Modigliani and Miller (1958) that asset determines the value of a firm. The implication of our study to Practise is that, firm efficiency and asset tangibility play significant role in determining firm value. Inflation as a Macroeconomic factor affects firm value. Managers of firms must be mindful of these findings and adopt strategies that will enhance positive firm value and dampen negative factors dampening firm value.

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